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From: Jim Ray (USNO 202-762-1444)
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Subject: [GPST] temperature sensitivity of D-M antennas
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The following preprint is available in pdf format at
<http://maia.usno.navy.mil/gpst/refs/raysenior.pdf> .

Ray, J.R., and K. Senior, Temperature sensitivity of timing measurements using Dorne Margolin antennas, GPS Solutions, in press 2000.

Abstract. We have inferred the temperature sensitivity of Dorne Margolin choke ring antennas by direct estimation from differential clock estimates for two GPS sites separated by 2400 km. At each site, the cable and receiver systems are very well isolated from environmental variations. By direct comparison of the observed clock variations between these sites with local temperature measurements, empirical temperature coefficients for each system have been estimated. These thermal coefficients most likely apply to the only uncontrolled components of the systems, the Dorne Margolin choke ring antennas. Based on these results, the short-term (diurnal) stability of the antennas appears to be better than 2 ps/C. The possibility that longer-term effects exist due to sensitivity in the daily average of the pseudorange observations has not been tested and cannot be excluded.